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Nutrition: NIH Gets a Senatorial Grilling

Senators McGovern and Dole, the chairman and ranking minority member, respectively, of the Senate Agriculture subcommittee on nutrition, are persuaded that the National Cancer Institute (NCI) is neglecting research on the relationship between diet and cancer.

The truth of the matter, of course, is that NCI is indeed neglecting such research, devoting, as it does, only about one per cent of its current $800 million plus budget to the subject, which its top management regards as an immature, schlock science — though it never openly describes it as such. This being the opinion, and the nutritional fervor of the Senators notwithstanding, the leaders of NCI and its parent agency, the National Institutes of Health (NIH), are stubbornly determined not to be stampeded into a reordering of research priorities—especially at the instigation of a couple of Senators who have no direct authority over the critical matter of money for NIH and its component institutes. McGovern and Dole, from the vantage point of an Agriculture subcommittee, can follow the nutrition trail wherever it leads, but they can't get at either the NIH budget or the statutes that determine use of that budget.

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Nevertheless, it is prudent for federal research administrators to be respectful to inquiring legislators, even if the intention, on the researchers' side of the matter, is to proceed on their own chosen course. And thus we have the background for hearings on June 12 and 13 in which the two Senators pounded away at the leaders of NIH and NCI, while, in response, the two witnesses smoothly assured the Senators that they couldn't agree more about the importance of nutrition research. But, as it came out under persistent grilling, the administrators have no intention of doing anything about it in the short run.

All in all, the proceedings were a remarkable confrontation between political demands on science and scientific resistance to being pushed by its lay superiors.

The hearings opened with Chairman McGovern, often with a tone of exasperation in his voice, stating that while "40 per cent of the cancers in men and 60 per cent in women are nutrition-related," NCI "continues to emphasize treatment and the search for cancer cures," adding that "today, the NCI is spending only one per cent of its funds on diet/cancer research." Furthermore, the chairman said, "There is no indication of an increase in the budget projections through 1983."

McGovern's opening statement was larded with references to the fact that, since the passage of the National Cancer Act of 1971, several billions have been spent on cancer research, "but an adult's overall chances today of being cured of cancer are not significantly better than they were back in 1940."

"I am . . . distressed," he said, "over the persistence of putting all our marbles in the 'cure' basket when the only viable long-term solution is the prevention of cancer and our other killer diseases."

The liberal McGovern and the conservative Dole both emphasized that their concern about NCI programs was in no way related to the post-Proposition 13 cost-cutting mood that now pervades Washington. Noting that the NCI budget is now nearing the $1 billion mark, Dole said, "If somebody would get up on the Senate floor and say, 'We think we ought to have a billion and a half for cancer,' it would probably pass. I think that is our

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In Brief

A 14-member delegation headed by White House Science Adviser Frank Press, and including the heads of NIH, NSF, NASA, and just about every other major federal research agency, is scheduled to visit Peking July 6-10 to discuss scientific and technical cooperation with China. The visit comes as the US, in response to increasingly shaky relations with the Soviets, is moving toward closer ties with the Chinese.

Press is something of an old China hand in regard to research matters. He formerly chaired the committee that administers the US side of scholarly exchanges with the Chinese; Anne Keatley, former executive director of that committee, is on Press's White House science office staff.

Latest of a growing flock of House members who have declared they've had enough of the congressional life is Paul Rogers (D-Fla.), chairman of the Health and the Environment Subcommittee. Rogers, 57, has long been a friendly and influential figure in the affairs of NIH, FDA and many other research-related agencies. Because of the swiftly changing lineup in the House, it's not clear who will be his successor.

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attitude," he said, emphasizing that effective use, rather than economy, was the object of the hearings.

As is customary in Congressional hearings of aggressive intent, the subcommittee started with several witnesses who, under friendly questioning, corroborated the correctness of the legislators' preconceptions. Thus, Theodore Cooper, dean and provost of Cornell University Medical School, who was formerly HEW Assistant Secretary for Health, was confronted with McGovern's suspicions that NIH might be exaggerating the amounts it spends on nutrition research. "We were told first in Fiscal 1977 it was $80 million," McGovern said, "and they later raised the estimate to $94 million."

"When I used to run a program," replied Cooper, who formerly headed NIH's Heart and Lung Institute, "the answer you got depended on the question you asked. If you ask what research are you supporting related to nutrition, you will get programs from the basic research budget, anything related to nutrition in it. . . . I think there is a tendency on all programs to have a lot of double reporting so the numbers look greater. Sometimes this is an advantage, if the Administration is trying to present an appearance of doing a lot in an area. Sometimes it is made small, if they are making a case for expansion."

Without specifically stating whether he accepted NIH's figures, Cooper left the impression that elastic reporting was not out of the question.

The next witness friendly to the subcommittee was George Blackburn, a Harvard Medical School surgeon who is director of the Nutrition Support Service at the New England Deaconess Hospital.

Medical schools, he said, virtually ignore nutrition, and "The decision-making forums at NIH, where allocation of research dollars occurs, are dominated by graduates of these medical schools, that is, physicians who have little if any formal training in nutrition and, consequently, small appreciation for recent advances in clinical nutrition."

Blackburn then homed in on NIH's own patient-care programs, charging that "The gap between what is known and well-documented regarding the role of diet and nutrition in disease prevention and what has been incorporated into clinical practice is astonishing. This gap," he continued, "is apparent within NIH's own Clinical Research Center," which, he said, "boasts one of the world's experts on hyperalimentation and one of the finest programs available for intravenous feeding of patients. Yet this outstanding nutritional service is not regularly or routinely consulted on patient therapy."

Blackburn went on: "The sparsity of research in clinical nutrition is embarrassing, to say the least, and is best described as scandalous."

Several other witnesses testified along similar lines, thus concluding the first day of testimony, which set the stage for the subcommittee to have a go at its principal targets, NCI Director Arthur Upton and NIH Director Donald Fredrickson.

McGovern commenced the proceedings by asserting that "It is incredible to me that as the diet and cancer evidence mounts, the research budget stagnates. I find it astonishing that even though the majority of cancers are preventable, the cancer research establishment continues to seek an elusive 'cure.' As much as we would like to discover a cure for cancer, there can be no justification for stubbornly pursuing unsupported viral hypotheses and other dry wells."

Expressing "serious misgivings about our biomedical research priorities," the indignant Senator said, "I think we have a right to demand increased accountability even from our nation's biomedical research scientists."

And then NCI's Upton, in a witness chair located at Ground Zero, thanked the Senators for their kindness in inviting him, and in a soft monotone recited a long inventory of NCI's activities related to nutrition and cancer.

McGovern then exploded, "How can you assert the vital relationship between diet and cancers and then submit a preliminary budget that only allocates a little more

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Critic Says NIH Dodges Public Responsibility

NIH officials frequently state that they are unable to provide broad-based nutritional advice because research in this area has not yet developed a sound base of scientific knowledge. This issue was addressed by Michael F. Jacobson, executive director of the Center for Science in the Public Interest, at an NIH conference on nutrition, June 19-20, in Bethesda, Md. Following is an excerpt from his talk, "Applying the Findings of Research":

. . . the use of drugs and medical technology does not hurt anyone's financial interests — except maybe the patient's — so there is no opposition to their use. Quite the contrary, drug and other corporations enthusiastically advocate the use of new technologies from which they will profit handsomely. Preventing a health problem in this day and age, however, often means stepping on the toes of some very powerful industries, industries which do not like to be stepped on, industries which have great influence over legislators and presidents, industries which could probably force cutbacks in the budgets of federal agencies, including even the politically popular National Institutes of Health. Vested interests know that NIH's true love is research, rather than applying the findings of research, and that they can usually win the day by saying, "All the facts are not in yet; NIH and others should do more research." The call "more research" can usually be translated into "less action."

Though more high-caliber research, particularly in human nutrition, needs to be done, *the overriding priority of conscientious — and budget-conscious — researchers and administrators should be to apply the findings of existing research.* For many questions, such as the relationships between diet and dental caries, heart disease, diabetes, hypertension, and certain cancers, we will probably never know all the details and mechanisms. . . .

The price of not applying research findings is enormous when translated into human suffering and lives. The public is willing to pour billions of dollars into biomedical research, because it assumes that new knowledge will be used to improve its health. Not using this new knowledge is a direct betrayal of the public.

. . . McGovern: NCI Budget Facts Are Elusive

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than one per cent to this problem?"

To which Upton, with no change in demeanor, replied, "That question, Mr. Chairman, is one which I am indeed concerned about myself." He then explained that since arriving at NCI, last July, he had set up a Working Group in Nutrition to study the subject, and that "I would confidently expect that the level of support in nutrition will increase."

McGovern responded that in 1975, NCI had assured him that the 1981 budget for nutrition research would be $33 million, but the latest projection for that year was $12 million.

"How can we be told in one minute that you are vitally aware of the relationship of what we eat to the risk factors that may bring on cancer, and then we see this budget so meager? I can't correlate the two," McGovern said.

Upton, as he often does, returned to the argument that he's a new boy in town. "Mr. Chairman," he said, "I can't speak to the projection that was made in 1975," adding that "the notion that we could go to $30 million in 1981 does not seem at all unreasonable to me."

McGovern: We are having great difficulty, frankly, Dr. Upton, finding out what your budget is. Why, for example, have we had three different budgetary estimates as to what you spent on nutrition in 1977?. . .

Upton: I understand, Mr. Chairman. The problem is basically one of definition. Nutrition is a thread woven into the fabric of studies throughout the Institute, and depending upon whether one chooses to include studies that have a nutritional component as part of the nutrition effort, or whether one wants to include only those studies which are predominantly related — over 50 per cent of the effort being nutrition related — one gets different totals. . .

Stymied by this stonewalling, McGovern turned to another subject, the resignation of Murray Brennan, frequently referred to as NIH's leading nutrition expert, from the chairmanship of the Nutrition Working Group to which Upton referred earlier.

Did he resign because of the group's "failure to address the diet-cancer relationship?" McGovern demanded.

Upton: Mr. Chairman, I would not want to conclude that Dr. Brennan resigned because he saw that the group was a failure. It is my understanding that he was entering a new responsibility in his clinical work that pre-empted his time. . .

Brennan was then waved to the witness table, and, looking a bit uncomfortable, lamely said: "I think it is fair to say that my predominant reason for resigning

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. . . Stony Brook's Missing Nutrition Program

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was the fact that my clinical commitments are such that it is just not practical for meeting with that group. In addition to that," he said, "that group has the problems of any group trying to define nutrition... For a neophyte that was a frustrating experience. . ."

As evidence of his interest in nutrition, Upton said that when he was dean of health sciences at the State University of New York, Stony Brook (1970-75), "it was only through the urgings of the medical students that I helped set up a course [in nutrition]. The faculty at that time failed to appreciate the importance of the subject in relation to other priorities in the curriculum."

This report drew the attention of Senator Patrick Leahy (D-Vermont) during his brief attendance at the hearings.

"Dr. Upton," he said, "you talked about Stony Brook and what you accomplished at Stony Brook. I applaud their efforts, but . . . a survey, in fact, done recently, by the American Medical Association on nutrition education in medical schools shows that Stony Brook does not have a required nutrition course for students, does not have nutrition incorporated into other courses, does not offer students the opportunity for nutrition research, and doesn't offer any post-graduate education programs in nutrition."

Upton: I regret that situation very much. As I tried to indicate, I think the status of nutrition in medical education needs very much more emphasis and the situation at Stony Brook, as you may or may not know, is a very special one.

Upton then explained that funds were in short supply for recruiting nutrition specialists.

The remainder of the NCI Director's morning in the witness chair more or less continued along the same lines: Yes, he insisted, nutrition is important, and we're working on doing something about expanding the NCI effort. To which McGovern responded:

"I can only say that I think we have a credibility crisis here in terms of the way research allocations are being made at the National Cancer Institute, and the suspicion that provoked these hearings in the first place . . . has grown all the stronger in my mind as I have listened to your testimony here today . . . I am very much distressed about what I think is a misallocation of funds . . . I remain unconvinced that you and your associates at the Institute are giving the degree of attention and committment to cancer prevention through nutrition research that the American people have a right to expect."

Upton replied, "Mr. Chairman, I appreciate your words and advice . . . I regret that within the time I have been at the Institute [11 months] we have not arrived at a stage that would allow us to see clearly what the budget should look like next year and the following year. . ." And so it went with the NCI Director, off whom the Senators' verbal blows glanced like marshmellows against armor plate. (Asked at one point whether NCI has produced any publications advising the public on nutrition and health, Upton monotonally listed several, including "Feeding the Sick Child," which, he added, "has just won an award from the American Institute of Graphic Arts and the Federal Design Council.")

Next in the witness chair was NIH Director Donald Fredrickson, who is more polished and argumentative

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Study for OSTP Says Energy Dept. Neglects Basic Research

The Department of Energy's research priorities "reflect a pre-occupation with certain near-term programs and neglect of longer-term fundamental work that is vital to the DOE mission," according to an advisory report prepared for the White House Office of Science and Technology Policy.

Based on a study by a 14-member group chaired by S.J. Buchsbaum, a vice president of Bell Labs, the report said that "The dearth of research is especially evident in the solar and fossil-fuel programs." And it urged that each of DOE's assistant secretaries "should include a basic research category within his budget and should acquire staff with expertise in the management of basic research."

Another recommendation called for additional funds for basic energy research in universities. "If necessary," the report states, "funds should be diverted from the development activities or even from other parts of the basic research program."

Among the many criticisms leveled at DOE was that of "excessive sensitivity of some program managers to perceived political pressures." And it was also charged "Significant long-term research support is deficient in the basic disciplines that are of crucial importance both to innovation and to engineering developments. The situation is further exacerbated because, under the pressure of meeting short-term program objectives, peripheral efforts are often mislabeled basic research."

(Copies of the report, titled "Report of the OSTP Working Group on Basic Research in the Department of Energy," are available without charge from: OSTP, Executive Office of the President, Washington, DC 20500.).

France: R&D Policy in Post-Election Doldrums

Paris. The torrid courtship that the French research community received from all parties during the recent national elections campaign (SGR Vol. VIII, No. 5) has not been followed by any notable delivery on promises from the re-elected government of President Valery Giscard d'Estaing.

In fact, apart from some shifts in high-level R&D administrative positions and shuffling of funds, the government conveys an impression of a reluctance to deal with the problems on which it loudly discoursed during the quest for votes.

The problems are two-fold: How to end the stagnation that has afflicted R&D budgets in recent years, and which of several competing agencies are to preside over the distribution of applied research funds that — as all political parties agreed — are needed to rejuvenate French industry. Neither problem will be easy to solve, since both are heavily enmeshed in the rigidities of custom and politics.

Most government R&D money here flows through two channels. One goes directly into the coffers of the big government research organizations, such as the National Center for Space Exploration (CNES), the Atomic Energy Commission (CEA), and the National Center for Scientific Research (CNRS); these budgets rarely ever experience any abrupt ups or downs — they just go on, year after year, regardless of the quality of performance or changes in national requirements. The other channel of government funding for R&D carries funds for the support of specially perceived R&D needs. The sums involved are not huge — no more than about $200 million a year — but they are intended to have a strategic role in R&D because they are over and above block support, and the universities and research firms that receive them are assumed to have inspired special confidence in their particular abilities.

However, despite the election-season promises, funds for both channels do not appear bound for any substantial increase in the budget that is now being prepared for 1979. The budgeting process is, needless to say, rather cumbersome, involving, as it does, two major steps, each of which contains many minor steps. The first draft, prepared between February and March, is the work of civil servants. When their part is done, the draft becomes the subject of negotiations between the Prime Minister and his cabinet members. Finally, the Parliament has to put its stamp of approval on the Prime Minister's recommendations, but the French national legislative body, unlike its American counterpart, is not inclined to quarrel with anything so obscure as the executive's R&D plans.

At this stage of the process, the reported trend is that we are to have more of the same — stagnation in purchasing power across the board, despite the election promises of the triumphant Democratic Union of France (UDF), whose campaign spokesman, Jean-Pierre Soisson, now the Minister of Sports, had earlier spoken of boosting R&D's share of the gross national product.

Some observers speculate that the budget situation reflects the appointment of two well-known technicians to head the two agencies in charge of R&D policy, Pierre Aigrain, as Secretary of State for Research, and Andre Giraud, as Minister of Industry. Lacking the self-assurance of electoral legitimacy, the two appointees are not in the strongest position for dealing with the Minister of Finance, which is seen here as perhaps bearing some close relationship to their selection. They are well equipped to spend money efficiently; they are not well equipped to obtain additional funds.

Aigrain is well-known on both sides of the Atlantic as a scientist and research administrator. Trained in the US as a solid-state physicist, he was a successful researcher for 15 years before becoming director of research for the French Army. He was subsequently a senior official of the Ministry of Education, when that agency was responsible for the CNRS and for research in the univer-

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as a congressional performer than is his NCI colleague.

Pressed, as was Upton, to account for the scope of nutrition research at NIH, Fredrickson countered:

"The major thing that moves science today is technical opportunity. Immunology has moved like a rocket because there are techniques for measuring antibodies and their relationship to disease and health. And when we get techniques for measuring nutritional status that are far more microscopic than they are in regard to whether you had a coronary, or you have a tumor of the bowel, then we will begin to see movement there, too. And that is the crucial thing that determines movement in science."

Fredrickson also candidly stated that nutrition research would grow at 10 per cent over the next few years; when McGovern responded that "you are barely going to keep ahead of inflation," Fredrickson simply replied:

"That is true of a lot of programs."

Fredrickson, whose time in witness chair was curtailed by the late hour, concluded by pledging to McGovern, "We will certainly continue to work with you completely, Senator."

McGovern flatly replied, "Thank you very much, gentlemen. We appreciate your appearance here today." —DSG

OTA Chief: On the Holes in Nuclear Policy

The following excerpt is from an address, "The Role of R&D in Meeting Societal Objectives," by Russell Peterson, director of the Office of Technology Assessment, at the Annual R&D Colloquium of the American Association for the Advancement of Science, June 20, in Washington:

One of the most comprehensive strategies ever mounted by the Federal government to bring about technological change in the civil sector was the effort to introduce civilian nuclear power. It is highly unlikely that nuclear power ever would have been developed if the atomic bomb had not been produced first under the cost-plus war-time economy. Starting with this basic technology and multibillion dollar government nuclear facilities, the Federal government mobilized the scientific and technical resources of private industry, national laboratories, and the universities to develop and demonstrate nuclear power; it provided fuel reprocessing facilities; it provided a conducive regulatory environment; and it imposed a legal limit on the damages that could be claimed after a nuclear accident through the Price-Anderson Act. This strategy was successful insofar as it led private investors to put billions of dollars into this technology, which now accounts for 12 percent of the electricity generated in this country.

However, the strategy followed is now widely recognized as seriously flawed. It failed to close the fuel cycle and adequately deal with the problem of nuclear waste disposal. Furthermore, inadequate efforts were made to insure the safety of nuclear power. As a consequence, serious doubts persist about nuclear power. Rather than enjoying wide public confidence it has become highly controversial.

The lesson I draw from this experience is one to which both proponents and opponents of nuclear power can subscribe. Where potential risks to human health and safety or the natural environment are involved, there is a preeminent Federal role in ascertaining the character and magnitude of those risks in order to expeditiously deal with them. It is far easier to honestly confront potential threats to health, safety, and the environment before, rather than after, billions of dollars in public and private investments have been made. Once commitments of that magnitude have been made, the vested interests are difficult to overcome. We then get carried into the future by the momentum of the status quo.

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sities. And until 1973, he was head of the Delegation Generale a la Recherche Scientifique et Technique (DGRST), the agency that was responsible for coordinating all government research activities. When Aigrain held the DGRST post, he reported directly to the Prime Minister. Now that he holds the title of Secretary of State for Research, he is more or less in the same relation to the chief of the government, since the DGRST directorship is still vacant, following the death last December of Bernard Gregory. Aigrain's return to government, following several years as head of research for CSF-Thomson, France's leading electronics firm, demonstrates the continued supremacy of physicists in R&D affairs, though, like all the other disciplines, they're not faring too well in budgetary matters. Meanwhile, the DGRST bureaucracy, without a head, is in the doldrums, and there is no sign of major decisions being made at any point in the grand administrative apparatus for research.

Andre Giraud, the new Minister for Industry, is a mining engineer who was formerly head of the atomic energy agency. A major responsibility in his new job will be to promote industrial innovation through applied research. Though he is only studying the matter at this point, the prospect of government action has already drawn fire from leaders of the scientific wing of the pro-Communist union. At a recent meeting, a union spokesman denounced "meddling of multi-national firms in research," and declared that "it is clear that the appointment of Andre Giraud, who won fame by dismantling the CEA [a reference to Giraud's reorganization of the nuclear agency] testifies to the government desire to reorganize and renounce whole research sectors."

Minister of Industry Giraud is obviously out to enlarge the resources at his disposal, even if the overall pie is to remain essentially the same. In June, Secretary of State for Research Aigrain was obliged to reassign to the Ministry some $50 million worth of development funds that were formerly under the control of the DGRST.

Aigrain, who is no novice in the ways of government, is not expected to go without some recompense for this loss. One possibility is that he may be given authority to improve his staff, which, at present, is not notably strong.

In any case, the election promises have been quickly forgotten. Our newly appointed science-policy officials are able and experienced, but are not positioned to command political support. At this point, the woes of French R&D, though well-documented in regard to budget needs, obsolete and costly programs, and so forth, remain as they were prior to the election. —FS

Britain: Scientists Strike for Higher Pay

London. Cutbacks in British government spending are beginning to hit research where it really hurts — in the scientists' paychecks. Discontent among government-employed scientists is so high that one group recently held a token strike to bring their plight to the public's attention. The strike, the first ever by the Institution of Professional Civil Servants (IPCS), was of scientists working mostly on building and transport research.

Ostensibly about cutbacks in staffing, poor promotion prospects, and, as they see it, enforced early retirement, the half-day token strike was also the product of several years of pay restraint during which, the scientists claim, they have been poorly treated. By American and European standards, that would seem to be the case, since even after five years of raging inflation, the annual pay for a senior researcher is around $12,500.

The government had agreed to review the scientists' complaints, but then in response to the recession that followed massive increase in oil prices, wage controls were implemented and pay increases were put off. Now, with the end of pay controls in sight, the scientists are beginning to voice their objections to the way in which their salaries have been, as they see it, kept down. Civil service scientists feel that on top of their earlier disadvantage the period of pay restraint has hit them hardest because, unlike industrial researchers, they have not been able to indulge in the rounds of artificial promotions and fake "productivity" deals that have kept workers in industry ahead of the wage norms laid down by the government in agreement with the unions.

The message is getting across. At the recent annual conference of the IPCS, the Lord Privy Seal, Lord Peart, who has the day-to-day responsibility for running the civil service, said: "Our scientists will always be in the public eye because their achievements keep them there. And because they are always on display it is particularly important that their pay must be right — by the taxpayers, the scientists themselves and by the ranks of research workers and technical managers in industry who work in the same fields as our own people. When the scientists go back into the pay research system in 1980 it will be with the knowledge that a new independent look has been taken at their difficulties."

Reassuring statements like this are not likely to carry much weight with researchers. Peart did not even admit that their grievances were justified, and he certainly did not promise that their salaries would be improved. However, it is difficult to see what the scientists can do. While coal miners have brought down governments in Britain, the Labor Government has been remarkably successful in its confrontations with its own employees — most recently the country's firemen were involved in a bitter and abortive strike that won them next to nothing — which explains why the scientists are content to hold half-day token strikes rather than all-out stoppages.

AAAS Study Finds Industry Isn't Seeking Federal R&D Aid

While federal R&D officials, most of them on leave from academic jobs, are cooking up government programs to boost research by industry, one veteran of the federal R&D scene notes that the initiative is not in response to any pleas from industry.

Writing in the AAAS' annual review of federal research programs, Willis H. Shapley, retired from a long career with the Budget of the Bureau and NASA, observed that "most of the federal programs that have been started or proposed for the general advancement of technology in industry seem to have been the brainchildren of federal officials who believe they know what industry needs, rather than responses to urgings from industry itself."

Shapley then asks, but doesn't answer: "Does industry really believe it needs more R&D than it is now conducting?"

The closest he comes to a reply is with the observation that "The view that the private sector may be underinvesting in R&D is not and perhaps cannot be clearly demonstrated by available economic indicators. But there are signs that can be taken as pointing in that direction, albeit not unambiguously."

Shapley also notes that "The President's State of the Union and budget messages stressed the importance of technological innovation to our economic well-being and the importance of new knowledge and basic research for technological innovation. On the other hand, the 1978 *Economic Report of the President,* issued a few days later, said not one word about the importance of technology or research and development.

"The economic high command," he continues, "acknowledges that the slowdown in productivity growth is one of the most significant problems of recent years. . . But they do not mention, let alone single out, the need for changes in policies on R&D or innovation in their catalogue of recommended policy measures."

(Copies of the AAAS Report, *Research & Development:* AAAS Report III, 117 p., are available for $6 each from: AAAS, Sales and Fulfillment Office, 1515 Mass. Ave. NW., Washington, DC 20005).

Microelectronics Stir Job-Loss Concern in UK

London. The fear that the growing use of microelectronics could throw thousands of people out of work has become so strong a political issue in Britain in recent months that Prime Minister James Callaghan has personally instructed the Central Policy Review Staff—the government's "think tank" — to start a study of the subject and to coordinate the various activities in this area. Callaghan's move comes at a time when the state-funded National Enterprise Board (NEB) is thinking of putting $90 million or more into creating a new microelectronics company in Britain.

Microelectronics technology, says Callaghan, "will have the deepest significance in the 1980s for the way in which the skills of the British people are used, and I wish to ensure that within the present state of knowledge we are fully aware of all the ramifications in reaching our conclusions on the social and economic consequences of this technology." Such is the concern of the country's unions that the Association of Professional, Executive, Clerical and Computer Staff has asked the Trades Union Congress to initiate its own study of the potential effects of microelectronics on employment.

The fear of the unions is that sectors of British industry will go the same way as the Swiss watch industry, which has been shattered by the digital watch, an invention made possible by the microelectronics revolution. For example, Britain's printing unions — especially those with members working on Fleet Street's newspapers — fear that the gradual introduction of new technologies based on microelectronics could eliminate many of their members' jobs.

The extent of the possible impact of microelectronics on British industry was summed up by Professor Christopher Freeman, head of the Science Policy Research Unit at Sussex University. According to Freeman: "The microelectronics revolution is not just 'one more' step in the process of technical change or one more new product. It is far more significant for the active British economy than aircraft development or nuclear power, which at present constitute the largest part of Government-financed research and development activities. It is more important than the future of the car industry, which at present has the greatest press coverage of any major industry. It is far more crucial to our future than the drug industry, which makes the biggest profits, or the steel industry, which makes the biggest losses."

That there is cause for concern over the implications of the microelectronics revolution was recognized some time ago by the government's Advisory Council on Applied Research and Development (ACARD), which had a study underway before the Prime Minister's intervention. The report of an ACARD working party is due soon.

For a change, the British government is not just sitting and wringing its hands about the possible impacts of a new development that is making other countries, most notably the US and Japan, a lot of money. The government has accepted the NEB's suggestion that it should establish a new UK manufacturing company in the field. And it seems that some of the initiative behind this idea — an idea that has had far from universal support from the existing electronics companies — came from the United States. It has been suggested that the NEB may be negotiating with a team of British and American engineers now working in "Silicon Valley." —MK

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